# Engineering Interpretations

## **Chemical Properties**

This table shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

**Properties** 

**DEPTH** to the upper and lower boundaries of each layer is indicated.

**SOIL REACTION** is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory.

**SALINITY** is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at typical sites of nonirrigated soils.

This subsection includes:

• (a) Chemical Properties

Map symbol and soil name	Depth	Cation  exchange  capacity 	Effective cation exchange capacity	Soil  reaction 	Calcium   carbon-   ate	Gypsum       	Salinity	Sodium adsorp- tion ratio
	In	  meq/100 g	  meq/100 g	   pH	Pct	Pct	mmhos/cm	_
Bk:			 	 				
OTTER	0-60	16-36		6.1-7.8	0	0	0	0
BLACKOAR	0-72	25-30		5.6-7.3				
Bo:				 				
BOOKER	0-5 5-66	30-45 35-50	 	5.6-7.3	0	0	0 0	0 0
Bp:       Borrow pits	0-60	   	   	   			0	
BrB:     BREMER	0-17	     36-41	   	     5.6-7.3	     0	0	0	
	17-60	36-41		5.6-6.5	0	0	0	0
Co:	0-60	     36-41	   	     5.6-7.3	0	0	0	
   Do:   DOCKERY	0 40		 	   				
DOCKERY	0-42 42-60	8.0-12 8.0-14	 	5.6-7.3				
Gp:     PITS		   	   	   				
   Ha:   HAYNIE	0-60	     15-20	   	     6.6-8.4	   0-25	0	0	

Map symbol and soil name	Depth	Cation  exchange  capacity 	Effective   cation  exchange  capacity	Soil  reaction 	Calcium   carbon-    ate   	Gypsum       	Salinity	Sodium   adsorp-   tion   ratio
	In	meq/100 g	meq/100 g	рН	Pct	Pct	mmhos/cm	
HgC:			 	 	 			
HIGGINSVILLE	0-10 10-87	13-20	 	5.6-7.3	 			
HgC2: HIGGINSVILLE	0-10 10-87	   13-20 	     	   5.6-7.3   5.1-6.5	     	 		
HgD2: HIGGINSVILLE	0-10 10-87	   13-20 	     	     5.6-7.3   5.1-6.5	 	 		
HnC3: HIGGINSVILLE	0-10 10-87	0.0-18	     	   5.6-7.3   5.1-6.5	     	 		
Ho:	   0-7   7-60	   3.0-10   3.0-9.0	     	     6.6-7.8   6.6-7.8	   5-10     5-10	0	0	
Ke∶							v	
KENNEBEC	0-60	30-36		5.6-7.3	0	0	0.0-2.0	0
⟨nB:		 	 	 	 			
KNOX	0-14	10-18	j	5.6-7.3	j j	j		·
	14-22	12-22		5.6-7.3				
	22-93	8.0-16		6.1-7.3				

Map symbol and soil name	Depth     	Cation  exchange  capacity 	Effective   cation  exchange  capacity	Soil  reaction 	Calcium   carbon-   ate	Gypsum	Salinity	Sodium   adsorp-   tion   ratio
	   In	meq/100 g	  meq/100 g	   pH	Pct	Pct	mmhos/cm	
KnC2:	 		 	 	 			
KNOX	0-14	10-18		5.6-7.3				
	14-22	12-22	i	5.6-7.3	i i	i		i
	22-93	8.0-16		6.1-7.3	j j			
KnD2:	 		 	 				
KNOX	0-14	10-18		5.6-7.3				
	14-22	12-22		5.6-7.3				
	22-93	8.0-16		6.1-7.3	i i			
KnD3:	  -			 				
KNOX	   0-14	10-18	 	   5.6-7.3	 			
KNOX	14-22	12-22		5.6-7.3				
	22-93	8.0-16		6.1-7.3				
KnE2:	 			 				
KNOX	   0-14	10-18	 	   5.6-7.3				
111021	14-22	12-22		5.6-7.3				
	22-93	8.0-16		6.1-7.3				
KnE3:	 			 				
KNOX	   0-14	10-18	 	   5.6-7.3				
111021	14-22	12-22		5.6-7.3				
	22-93	8.0-16		6.1-7.3				
KnF2:	 			 				
KNOX	   0-14	10-18		   5.6-7.3				
111011	14-22	12-22		5.6-7.3				
	22-93	8.0-16	i	6.1-7.3				

KNOX	Map symbol and soil name	Depth	Cation  exchange  capacity	Effective   cation  exchange  capacity	Soil  reaction 	Calcium  carbon-    ate	Gypsum	Salinity	Sodium adsorp- tion ratio
LeB:  LESLIE		   In	meq/100 g	  meq/100 g	рН	Pct	Pct	mmhos/cm	
LeB:  LESLIE	⟨nF3:			 		 			 
LeB:  LESLIE	KNOX	0-14	10-18		5.6-7.3	i i			
LeB:  LESLIE		14-22	12-22	i	5.6-7.3	i i			
LESLIE		22-93	8.0-16		6.1-7.3	ļ ļ			
LESLIE	LeB:			 		 			
19-22   10-18		0-19	8.0-14		5.1-7.3	0 1	0	0	0
LeC2:  LeSLIE			1			: :	0		!
LeC2:  LESLIE			1			i o i	0	0	0
LESLIE		42-76	10-18		5.1-7.3	0	0	0	!
LESLIE	TeC2:	 		 	 	 			
19-22   10-18     5.1-7.3   0   0   0   0   0   0   0   0   0		0-19	8.0-14		5.1-7.3	0	0	0	0
Lt:  LETA			1			! !	0	-	!
Lt:  LETA			1			i o i	0	0	0
LETA		42-76	1			0	0	0	0
LETA	T.+:	<u> </u>		 	 				
MACKSBURG		0-8	22-28		6.6-7.8	1-2	0	0	0
MACKSBURG 0-15 30-36 5.1-7.3 0 0 0 0 0 0 0 0		8-25	1			1 1	0	0	!
WATER			1				0	0	0
MACKSBURG		   	   	   	   	   			   
MACKSBURG	√aD.•			 	 				
15-39   30-36     5.1-6.0   0   0   0   0		 	30-36	 	   5 1_7 2		Ο	) 	1
	MINCRODUCE			 		! .	_	-	!
			•	!		! - !	-	-	!

Map symbol and soil name	Depth	Cation exchange capacity	Effective cation exchange capacity	Soil  reaction 	Calcium  carbon-   ate 	Gypsum	Salinity	Sodium   adsorp-   tion   ratio
	In	meq/100 g	meq/100 g	рН	Pct	Pct	mmhos/cm	
MaB2:					 			
MACKSBURG	0-15	30-36		5.1-7.3	j o j	0	0	j o
	15-39	30-36		5.1-6.0	j 0 j	0	0	j o
	39-61	30-36		5.6-6.5	0	0	0	0
Md: MINE PITS AND DUMPS		   		   	   			
MdC2:					 			
MANDEVILLE	0-5	5.0-10		5.1-6.5	0	0	0	j o
	5-26 26-35	 	6.0-16 	4.5-6.0	0	0	0	0
MdD2:		 			 			
MANDEVILLE	0-5	5.0-10		5.1-6.5	0	0	0	0
	5-26		6.0-16	4.5-6.0	0	0	0	0
	26-35							
IhB:		 			 			
MARSHALL	0-13	25-30		5.6-7.3	0	0	0	0
	13-48	25-30		5.6-7.3	0	0	0	0
	48-99	20-25		6.6-7.3	0	0	0	0
ihC2:								
MARSHALL	0-13	25-30		5.6-7.3	j o j	0	0	0
	13-48	25-30		5.6-7.3	j o j	0	0	0
	48-99	20-25		6.6-7.3	j o j	0	0	j o

Map symbol and soil name	Depth	Cation  exchange  capacity 	Effective   cation  exchange  capacity	Soil  reaction 	Calcium  carbon-    ate	Gypsum	Salinity	Sodium   adsorp-   tion   ratio
	In	meq/100 g	meq/100 g	рН	Pct	Pct	mmhos/cm	-
MhC3:	 		 		 			
MARSHALL	0-13	25-30		5.6-7.3	i o i	0	0	i o
	13-48	25-30		5.6-7.3	i o i	0	0	j o
	48-99	20-25		6.6-7.3	0	0	0	0
MhD2:	 		 		 			
MARSHALL	0-13	25-30	i	5.6-7.3	i o i	0	0	j o
	13-48	25-30	i	5.6-7.3	j o j	0	0	j o
	48-99	20-25		6.6-7.3	0	0	0	0
MhD3:	 		 		 			
MARSHALL	0-13	25-30		5.6-7.3	i o i	0	0	i o
	13-48	25-30		5.6-7.3	i o i	0	0	0
	48-99	20-25		6.6-7.3	0	0	0	0
MkB:	 		 		 			
MCGIRK	0-12	8.0-16	i	5.1-6.5	i o i	0	0	j o
	12-23		14-20	4.5-5.5	j o j	0	0	0
	23-45		18-25	4.5-6.0	j 0 j	0	0	j o
	45-83		10-18	4.5-6.0	0	0	0	0
MkC2:	 		 		 			
MCGIRK	0-12	8.0-16	i	5.1-6.5	j o j	0	0	j o
	12-23		14-20	4.5-5.5	j o j	0	0	j 0
	23-45		18-25	4.5-6.0	j 0 j	0	0	j o
	45-83		10-18	4.5-6.0	0	0	0	0
MnB:	 		 					
MINDEN	0-20	30-36	i	5.6-7.3	0	0	0	0
	20-30	30-36	j	5.6-7.3	j 0 j	0	0	0
	30-78	25-30		5.6-7.3	j o j	0	0	j o

Map symbol   and soil name	Depth	Cation  exchange  capacity 	Effective   cation  exchange  capacity	Soil  reaction   	Calcium   carbon-    ate	Gypsum       	Salinity	Sodium adsorp- tion ratio
	In	  meq/100 g 	  meq/100 g 	   pH 	   Pct   	Pct	mmhos/cm	_     
0:		 	 		 			
MODALE	0-24 24-60	15-20   41-55	 	7.4-8.4	5-30   5-30	0	0	0   0
	24 00	41 33		7.4 0.4	3 30		O	
tB:   MONITEAU	0-20	10-16	 	   5.6-7.3				
MONITEAU  	20-32	9.0-16	 	5.6-7.3				
	32-60		19-26	4.5-6.0				
y:		 	 	 	 			
MYRICK	0-13		 	7.4-8.4			0	
	13-36	j		7.4-8.4	j j	j	0	j
ro:					 			
NODAWAY	0-70	20-25		6.1-7.3	0	0	0.0-2.0	0
oC2:					 			
POLO	0-13	13-16		5.6-6.5	0	0	0	0
	13-63	15-18		5.1-6.5	0	0	0	0
	63-73	17-25 	 	5.1-6.5 	0	0	0	0
oD2:					į į			
POLO	0-13	13-16		5.6-6.5	0	0	0	0
	13-63 63-73	15-18   17-25	 	5.1-6.5   5.1-6.5	0	0	0 0	0 0
•		İ	  -		į į	į		İ
u: LIME STONE QUARRY			 	 				

Map symbol and soil name	Depth	Cation  exchange  capacity 	Effective   cation  exchange  capacity	Soil  reaction 	Calcium  carbon-   ate	Gypsum	Salinity	Sodium   adsorp-   tion   ratio
	In	meq/100 g	  meq/100 g	   pH	Pct	Pct	mmhos/cm	-     
Ra: RAY	0-60	20-25	   	     6.1-7.3	0	0	0.0-2.0	0
Rw: RIVERWASH	0-6 6-60	     	     	     	     	 	0 0	
SaB: SAMPSEL	0-20 20-60	   15-22   20-30	     	5.6-7.3 5.6-7.8	0 0	0 0	0 0	0 0
SaC2: SAMPSEL	0-20 20-60	15-22 20-30	     	5.6-7.3	0 0	0 0	0 0	0 0
SaC3: SAMPSEL	0-20 20-60	   15-22   20-30	     	   5.6-7.3   5.6-7.8	0 0	0 0	0 0	0 0
SaD2: SAMPSEL	0-20 20-60	   15-22   20-30	     	   5.6-7.3   5.6-7.8	0	0 0	0 0	0 0
Sd: SARPY	0-60	2.0-6.0	   	     6.6-8.4	1-2			
SnD2: SNEAD	0-11   11-32   32-60	14-22 20-30	   	   6.1-7.3   6.6-8.4 	   0     5-10   	0 0 	0 0 	0 0

Map symbol and soil name	Depth     	Cation  exchange  capacity 	Effective   cation  exchange  capacity	Soil  reaction 	Calcium   carbon-    ate	Gypsum     	Salinity	Sodium   adsorp-   tion   ratio
	   In	  meq/100 g	  meq/100 g	   pH	Pct	Pct	mmhos/cm	_
SoD:	 	 	 		 			
SOGN	0-5 5-60	15-30		7.4-8.4	1-10	0	0	0
SoF:	 	 	 		 			
SOGN	0-5 5-60	15-30	 	7.4-8.4	1-10   	0	0	0
W: WATER	   		   	   	   			
Wa:	 		 					
WALDRON	0-4	15-24		6.6-7.8	0-1	0	0	0
	4-60	20-30		7.4-8.4	1-5	0	0	0
Wb:	 		 		 			
HAYNIE	0-60	15-20		6.6-8.4	0-25	0	0	0
WAUBONSIE	   0-14	15-20	 	   7.4-8.4	   5-30		0	
	14-24	15-20		7.4-8.4	5-30	i	0	
	24-60	15-20		7.4-8.4	5-30		0	
WdB:	 	 	 		 			
WINFIELD	0-13	10-15		5.6-7.3	i i			
	13-45	12-17	i	5.6-7.3	i i	i		j
	45-73	10-14		5.1-6.5	ļ ļ			j
wdC2:	 	[ [	 					
WINFIELD	0-13	10-15		5.6-7.3	i i	i		j
	13-45	12-17	j	5.6-7.3	j j			j
	45-73	10-14		5.1-6.5	i i	i		j

Lafayette County, Missouri Chemical Properties of the Soils

Map symbol and soil name	Depth	Cation  exchange  capacity 	Effective   cation  exchange  capacity	Soil  reaction 	Calcium   carbon-   ate	Gypsum       	Salinity	Sodium adsorp- tion ratio
	In	meq/100 g	  meq/100 g	   pH	Pct	Pct	mmhos/cm	_   
idD2:		[ [	[ [	[ [	 			İ
WINFIELD	0-13	10-15		5.6-7.3	i i			
İ	13-45	12-17		5.6-7.3	i i			i
	45-73	10-14		5.1-6.5	ļ ļ			
  dE2:		 	 	 	 			
WINFIELD	0-13	10-15	i	5.6-7.3	i i	j		j
į	13-45	12-17	i	5.6-7.3	i i	j		j
ļ	45-73	10-14		5.1-6.5	ļ ļ	j		
   If C3		 	 	 	 			
WINFIELD	0-13	14-17		5.6-7.3	i i	i		i
i	13-45	12-17	i	5.6-7.3	i i	i		j
	45-73	10-14		5.1-6.5	ļ ļ	j		
  fD3:		 	 	 	 			
WINFIELD	0-13	14-17	i	5.6-7.3	i i	i		j
į	13-45	12-17	i	5.6-7.3	i i	j		j
ļ	45-73	10-14		5.1-6.5	į į			
/o:			 	 	 			
ZOOK	0-18	36-41		5.6-7.3	i o i	0	0	0
	18-88	30-36		5.6-7.8	0	0	0	0
i		İ	İ	İ	i i	i		j